Docket No. NC 84,353 Inventor(s): Long et al.

Claims

- 1. An electrode for use in energy storage comprising:
 - (a) a nanostructured, mesoporous electrically conductive metal oxide; and
 - (b) an ultrathin, conformal polymer coating on the metal oxide; wherein said electrode has a mesoporous structure.
- 2. The electrode of claim 1 wherein said metal oxide is selected from the group consisting of manganese oxides, vanadium oxides, nickel oxides, iron oxides, and physical or compositional mixtures thereof.
- 3. The electrode of claim 1 wherein said polymer coating is based on an arylamine monomer.
- 4. The electrode of claim 1 wherein said polymer coating is selected from the group consisting of o-phenylenediamine, aniline, and mixtures thereof.
- 5. The electrode of claim 1 wherein said polymer coating is deposited electrochemically on said metal oxide.
 - 6. The electrode of claim 1 wherein said polymer coating is less than 10-nm thick.
- 7. A method for making an electrode for use in energy storage, comprising the steps of:
 - (a) preparing a nanostructured, mesoporous metal oxide film; and
 - (b) depositing a polymer coating on the metal oxide film; wherein said electrode has a mesoporous structure.
- 8. The method of claim 7 wherein said metal oxide is selected from the group consisting of manganese oxides, vanadium oxides, nickel oxides, iron oxides, and physical or compositional mixtures thereof.
- 9. The method of claim 7 wherein said polymer coating is based on an arylamine monomer.
- 10. The method of claim 7 wherein said polymer coating is selected from the group consisting of o-phenylenediamine, aniline, and mixtures thereof.

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11. The method of claim 7 wherein said polymer coating is deposited electrochemically on said metal oxide.

12. The method of claim 7 wherein said polymer coating is less than 10-nm thick.